



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,982	08/22/2003	Deborah A. Langer	3248	3038

7590 01/17/2007
THE LUBRIZOL CORPORATION
Patent Administrator - Mail Drop 022B
29400 Lakeland Boulevard
Wickliffe, OH 44092-2298

EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
----------	--------------

1714

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/646,982

Applicant(s)

LANGER ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9,11-18,20 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9,11-18,20 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/18/06.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/18/06 has been entered.
2. Applicants' filing of terminal disclaimer on 10/18/06 is acknowledged. It is noted that the terminal disclaimer is proper.
3. All outstanding rejections are overcome by applicants' amendment filed 10/18/06.

Information Disclosure Statement

4. It is noted that applicants filed two information disclosure statements on 10/18/06. Given that these information disclosure statements are copies of the IDS previously filed on 8/22/03 and 3/31/05, all references have been stricken as redundant.

Claim Objections

5. Claims 4-7 and 9 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to

Art Unit: 1714

cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 4, which depends on claim 1, recites "the emulsifier comprises a mixture of the reaction product of a fatty acid with an alkanolamine and the reaction product of a polyisobutylene substituted succinic acid or anhydride with an alkanolamine or an alkylene polyamine, the polyisobutylene substituent having number average molecular weight of about 300 to about 3000" while claim 1 discloses that the emulsifier comprises "a C₉-C₁₁ alkoxy poly(ethoxy)₈ alcohol; a C₁₂-C₁₅ alkoxy poly(isopropoxy)₈ alcohol;....., polyethoxy glycerol trioleate; or a mixture of two or more thereof". Thus, claim 4 fails to further limit the scope of the claim on which it depends, namely claim 1, given that claim 4 recites completely different emulsifiers than recited in claim 1.

Similar objections arise in each of claims 5-7 and 9, which each depends on claim 1, given that each of these claims recites emulsifiers that are different than those recited in claim 1.

In light of the amendment to claim 1, should claims 4-7 and 9 be cancelled?

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1714

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
8. Claims 1-3, 11, 13-18, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/083020 in view of either Hori et al. (U.S. 2002/0017052) or Wenzel et al. (U.S. 4,083,698).

WO 03/083020 discloses combination of fuel and lubricant for an internal combustion engine wherein the lubricant comprises lubricating oil such as natural oil or synthetic oil that possesses phosphorous content below 0.1%, preferably 0.02-0.06%, sulfur content below 0.5%, preferably 0.1-0.4%, and ash content below 1.5% (which includes ashless), dispersant such as polyisobutenyl succinimide, antioxidant, and other additives such as viscosity modifier,

corrosion inhibitor, and antiwear agent and wherein the fuel is an emulsified fuel which is a water in oil composition comprising fuel such as hydrocarbon fuel including gasoline or non-hydrocarbon fuel such as methanol, ethanol, diethyl ether, etc. and emulsifiers. It is further disclosed that the internal combustion engine comprises exhaust treatment device that traps NO_x and is equipped with system to re-circulate exhaust gas. It is also disclosed that such combination results in reduction of emissions such as particulate matter (page 1, lines 9-13, page 3, lines 12-13 and 17-22, page 6, line 12, page 12, lines 5-20, page 12, line 26-page 13, line 9, and page 17, lines 1-11 and 21-23). There is no disclosure in WO 03/083020 of chlorine or chlorine containing compounds and thus, it is clear that the chlorine content of the combination must intrinsically be less than 100 ppm as required in present claim 16.

The difference between WO 03/083020 and the present claimed invention is the requirement in the claims of specific emulsifier utilized in the emulsified fuel.

Hori et al., which is drawn to emulsified fuel for engines, disclose that the emulsified fuel utilizes emulsifier such as glycerol monooleate in order to impart rust preventive effect (paragraphs 2, 4, 7, and 20 (line 26)).

Alternatively, Wenzel et al., which is drawn to emulsified fuel for internal combustion engines, disclose that the emulsified fuel utilizes combination of emulsifiers that includes polyethylene glycol dioleate or sorbitan trioleate in order to provide emulsified fuel that is stable at temperatures below freezing point of water and that will maintain clarity and low viscosity characteristics without phase separation (col.1, lines 15-28 and 59-77, col.3, lines 30-38 and 43-48, and Table I).

Given that WO 03/083020 in combination with Hori et al. or Wenzel et al. disclose combination of emulsified fuel and lubricant as presently claimed, it is clear that such combination would intrinsically result in reducing engine emissions as presently claimed.

In light of the motivation for using specific emulsifiers disclosed by Hori et al. or Wenzel et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such emulsifiers in the emulsified fuel of WO 03/083020 in order to produce combination that does not cause rusting or, alternatively, combination that is stable at temperatures below freezing point of water and that will maintain clarity and low viscosity characteristics without phase separation, and thereby arrive at the claimed invention.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/083020 in view of either Hori et al. or Wenzel et al. as applied to claims 1-3, 11, 13-18, and 20-21 above, and further in view of either Bloch et al. (U.S. 7,018,962) or Arai et al. (U.S. 5,707,942).

The difference between WO 03/083020 in view of either Hori et al. or Wenzel et al. and the present claimed invention is the requirement in the claims of specific antioxidant.

WO 03/083020 discloses the use of antioxidant in the lubricant, however, there is no disclosure of specific antioxidant as presently claimed.

Bloch et al., which is drawn to lubricating oil for engine, disclose the use of antioxidant such as hindered phenol or sulfurized phenate in order to prevent oxidative deterioration and thus, prevent sludge in lubricant, varnish like deposits on metal surface, and viscosity growth (col.1, lines 6-18 and col.10, lines 24-35).

Alternatively, Arai et al., which is drawn to lubricating oil for engines, disclose the use of antioxidant such as diphenyl amine, 2,6-di-t-4-methylphenol, or 4,4'-methylenebis(2,6-di-t-butylphenol) (col.1, lines 4-5 and 12-13 and col.8, lines 35 and 56-63).

In light of the disclosures of Bloch et al. and Arai et al. as described above of antioxidant, it therefore would have been obvious to one of ordinary skill in the art to utilize such antioxidants in the combination of WO 03/083020 in order to prevent oxidative deterioration, and thereby arrive at the claimed invention.

10. Claims 1-7, 9, 11-18, 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/97952 in view of either Hori et al. (U.S. 2002/0017052) or Wenzel et al. (U.S. 4,083,698) and either WO 02/24842 or Carrick et al. (U.S. 6,583,092).

WO 01/97952 discloses emulsified fuel for a combustion engine. The emulsified fuel comprises water, diesel fuel, and emulsifier wherein the emulsifier includes (i) fuel soluble product made by reacting at least one hydrocarbyl-substituted carboxylic acid acrylating agent with ammonia or amine wherein the hydrocarbyl substituent has 50-500 carbon atoms and Mn of about 70 to about 3000, (ii) ionic or nonionic compound with HLB of 1-30 such as amine oxide, glycol ester, lignin, etc., (iii) mixture of (i) and (ii), (iv) water-soluble compound such as amine salt, ammonium salt, nitrate esters, nitro compound, alkali metal salts, and alkaline earth metal salts, (v) reaction product of polyacidic polymer with fuel soluble reaction product made by reacting at least one hydrocarbyl substituted carboxylic acid acrylating agent with ammonia, amine, or polyamine, and (vi) mixture of (ii) and (v). It is disclosed that the emulsifier comprises a mixture of the product made from the reaction of polyisobutene substituted succinic acid or

Art Unit: 1714

anhydride with alkanol amine wherein the polyisobutene has Mn of about 1500 to about 3000, the product made from the reaction of hydrocarbon substituted succinic acid or anhydride with alkanol amine wherein the hydrocarbon substituent has about 12 to about 300 carbon atoms, and the product made from the reaction of a polyisobutene-substituted succinic acid or anhydride with at least alkylene polyamine wherein the polyisobutene group has Mn of about 740 to about 1500. It is further disclosed that the emulsifier comprises (I) first polycarboxylic acrylating agent having hydrocarbon substituent of 20-500 carbon atoms and (II) second polycarboxylic acrylating agent having hydrocarbon substituent of up to about 500 carbon atoms wherein (I) and (II) are linked together by linking group derived from compound having 2 or more primary amino groups, 2 or more secondary amino groups, at least one amino group and at least one secondary amino group, at least 2 hydroxyl groups, or at least one primary or secondary amino group and at least one hydroxyl group with the acrylating agents being reacted with amine. There is also disclosed additives such as surfactants and rust inhibitor. There is also disclosed internal combustion engine comprising the above emulsified fuel wherein the use of the fuel results in the reduction of NO_x and particulate emissions and wherein the engine comprises exhaust after-treatment device that contacts exhaust with particulate filter/trap (col.1, lines 10-14, col.3, lines 5-18, col.5, lines 5-11 and 20-28, col.6, lines 24-30, col.7, lines 19-30, col.8, lines 5-17, col.16, lines 17-20, col.19, lines 14-24, col.29, line 18-col.30, line 12, col.32, lines 2-7, col.33, lines 2-4, col.37, line 7, and col.38, lines 6-16).

The difference between WO 01/97952 and the present claimed invention is the requirement in the claims of (a) lubricant and (b) specific emulsifier utilized in the emulsified fuel.

With respect to difference (a), WO 02/24842, which is drawn to lubricating oil composition that is mixed with fuel composition and used in combustion engine, discloses the use of lubricating oil composition comprising base oil such as mineral oil or poly-alpha-olefin oil, ashless dispersant that is Mannich dispersant or carboxylic dispersant, i.e. prepared by reacting carboxylic acid acrylating agent such as hydrocarbon substituted succinic acid or anhydride with amino compound, and antioxidant such as 4,4-methylenebis-2,6-di-t-butyl-phenol. It is disclosed that the lubricating oil contains 5-25 ppm sulfur and less than 50 ppm other impurities. The motivation for using such lubricant is to extend the required time intervals between oil changes and reducing No_x levels in exhaust gases (page 1, 2nd paragraph, page 4, 2nd and 7th paragraphs, paragraph bridging pages 6-7, page 7, 1st full paragraph, page 8, 1st and 4th paragraphs, page 10, 2nd paragraph, page 11, 1st and 2nd paragraphs, page 14, 1st full paragraphs, page 19, 1st full paragraph, page 22, page 23, 3rd full paragraph, and page 31).

Alternatively, Carrick et al., which is drawn to lubricating oil composition, disclose the use of lubricating oil comprising base oil such as synthetic oil Groups I-V, ashless dispersant such as carboxylic dispersant, amine dispersant, or Mannich dispersant and antioxidant including nonylated diphenyl amine wherein the oil comprises up to 0.01% phosphorus, up to 0.25% sulfur, up to 10 ppm chlorine, and up to about 1.2% ash. The motivation for using such lubricating oil composition is to provide composition with improved high temperature deposit performance, oxidative stability, lead and copper corrosion inhibition, and improved seal compatibility (col.1, lines 11-122, col.3, lines 1 and 17-43, col.3, line 49-col.4, line 15, col.4, lines 35-51, col.15, line 1, col.17, lines 4-14, col.24, lines 5-39 and 65, and col.27, lines 60-65).

With respect to difference (b), Hori et al., which is drawn to emulsified fuel for engines, disclose that the emulsified fuel utilizes emulsifier such as glycerol monooleate in order to impart rust preventive effect (paragraphs 2, 4, 7, and 20 (line 26)).

Alternatively, Wenzel et al., which is drawn to emulsified fuel for internal combustion engines, disclose that the emulsified fuel utilizes combination of emulsifiers that includes polyethylene glycol dioleate or sorbitan trioleate in order to provide emulsified fuel that is stable at temperatures below freezing point of water and that will maintain clarity and low viscosity characteristics without phase separation (col.1, lines 15-28 and 59-77, col.3, lines 30-38 and 43-48, and Table I).

Given that WO 01/97952 in combination with either Hori et al. or Wenzel et al. and either WO 02/24842 or Carrick et al. disclose combination of emulsified fuel and lubricant as presently claimed, it is clear that such combination would intrinsically result in reducing engine emissions as presently claimed.

In light of the motivation for using lubricant disclosed by WO 02/24842 or Carrick et al. as described above and for using specific emulsifiers disclosed by Hori et al. or Wenzel et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such lubricant and emulsifiers in WO 01/97952 in order to produce combination of emulsified fuel and lubricant wherein either the combination has extended time intervals between oil changes and reduced No_x levels in exhaust gases, or alternatively, the combination has improved high temperature deposit performance, oxidative stability, lead and copper corrosion inhibition, and improved seal compatibility and in order to produce combination that does not cause rusting or, alternatively, combination that is stable at temperatures below freezing point of water and that

will maintain clarity and low viscosity characteristics without phase separation, and thereby arrive at the claimed invention.

Response to Arguments

11. Applicants' arguments regarding Duncan et al. (U.S. 6,748,905) have been considered but they are moot in view of the discontinuation of the use of this reference against the present claims.

12. Applicants' arguments filed 10/18/06 have been fully considered but, with the exception of arguments relating to Duncan et al., they are not persuasive.

Specifically, applicants argue that WO 01/97952 is not a relevant reference against the present claims given that there is no disclosure in WO 01/97952 of emulsifiers as presently claimed.

It is agreed that there is no disclosure in WO 01/97952 of emulsifiers as now required in all the present claims. This is why WO 01/97952 is now used in combination with either Hori et al. or Wenzel et al. which each disclose emulsifier as presently claimed.

Applicants argue that WO 01/97952 is not a relevant reference against the present claims given that WO 01/97952 does not disclose lubricant with ash content as presently claimed.

It is agreed that there is no disclosure in WO 01/97952 of lubricant as presently claimed which is why WO 01/97952 is used in combination with WO 02/24842 or Carrick et al. which each disclose lubricant comprising base oil, ashless dispersant, and antioxidant.

Applicants argue that neither WO 02/24842 nor Carrick et al. are relevant references against the present claims given that there is no disclosure in either reference of emulsified fuel as presently claimed.

While there is no disclosure in WO 02/24842 or Carrick et al. of emulsified fuel, note that WO 02/24842 and Carrick et al. are each used as a teaching reference, and therefore, it is not necessary for these secondary references to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather these references teach a certain concept, namely, the use of lubricant to extend time between oil changes and reduce NO_x levels in exhaust gas (WO 02/24842) or to provide lubricant with improved high temperature deposit performance, oxidative stability, lead and copper corrosion inhibition, and improved seal compatibility (Carrick et al.) and in combination with the primary reference, disclose the presently claimed invention.

Further, it is significant to note that WO 02/24842 does disclose that the lubricant is used with fuel and is used in combustion engine while Carrick et al. also disclose using the lubricant in combination with fuel. Given that WO 01/97952 discloses the use of emulsified fuel in combination with lubricant and given that WO 02/24842 and Carrick et al. each teach the use of lubricant in combination with fuel, it is the examiner's position one skilled in the art would have expected that the lubricant of WO 02/2482 or Carrick et al. would be suitable in WO 01/97952.

Applicants also argue that there is no disclosure in WO 02/24842 that lubricant has ash content of less than 1 wt. percent as presently claimed.

However, it is noted that page 7, lines 3-5 of WO 02/24842 discloses that the lubricating oil composition is characterized by absence of detergents or dispersants of the ash-producing type, i.e. composition comprises no ash. Thus, it is the examiner's position that WO 02/24842 does disclose lubricant that has ash content as presently claimed.

Applicants also argue that there is no disclosure in WO 01/97952, WO 02/24842 or Carrick et al. that combination of emulsified fuel and lubricant as presently claimed results in reduction of engine emissions as presently claimed.

However, given that WO 01/97952 in combination with either Hori et al. or Wenzel et al. and either WO 02/24842 or Carrick et al. disclose combination of emulsified fuel and lubricant as presently claimed, it is clear that such combination would intrinsically result in reducing engine emissions as presently claimed.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mullay et al. (U.S. 2006/0162237) disclose emulsified fuel as presently claimed, however, there is no disclosure of lubricant and thus, no disclosure of combination of emulsified fuel and lubricant as presently claimed.

Burrington et al. (U.S. 2006/0272597) disclose emulsified fuel and lubricating oil, however, there is no disclosure of emulsifiers as now required in all the present claims.

Art Unit: 1714

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
1/7/07